

642-111

Dart Aerospace Ltd.

Date: Tuesday, 10/06/2008 10:10:47 AM
 User: Julie Lecocq

Process Sheet

Customer	: CU-DAR001 Dart Helicopters Services	Drawing Name	: LOW GEAR SKIDTUBE ASSEMBLY 206 A/B
Job Number	: 39756A		
Estimate Number	: 11972		
P.O. Number	:	Part Number	: D206642141
This Issue	: 10/06/2008	S.O. No.	:
Prsht Rev.	: NC	Drawing Number	: D2650 REV E
First Issue	: / /	Project Number	: N/A
Previous Run	: 25504A	Drawing Revision	: E
	Type : SKIDTUBES	Material	:
Written By	:	Due Date	: 30/06/2008
Checked & Approved By	: <u>JLD 08.10.10</u>	Qty:	1 Um: Each
Comment	: Est Rev: H 05.10.11 ECN 847 & 901; Add Tow Ring and GHW Kit; CHG004 KJ/CP/JLM		

Additional Product

Job Number:



Seq. #:	Machine Or Operation:	Description :
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1.0	DC	DOCUMENT CONTROL
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**Comment:** DOCUMENT CONTROL

Photocopy bluefile & type labels per PPP D206-642-141

CHG001

N/A *[Signature]*

2.0	D2620	Skidtube, 206 Skidtube
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**Comment:** Qty.: 1.0000 Each(s)/Unit Total: 1.0000 Each(s)

Pick:

Qty	Part Number	Description	Batch
1	D2620	Bent Tube 3" OD	B39178

① M 8-6-11

3.0	D32861	Doubler
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**Comment:** Qty.: 2.0000 Each(s)/Unit Total: 2.0000 Each(s)

Pick:

Qty	Part Number	Description	Batch
2	D3286-1	Doubler	B33825

② M 8-6-11

4.0	D2647	Cap
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**Comment:** Qty.: 1.0000 Each(s)/Unit Total: 1.0000 Each(s)

Pick:

Qty	Part Number	Description	Batch
1	D2647	Fwd Cap	B35475

Fwd Cap

B35475 BE 8-6-11

W/O:		WORK ORDER CHANGES					
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Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

QA: N/C Closed: _____ Date: _____

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Description :

5.0

SKIDTUBES 1

SKIDTUBESS RESOURCE 1



Comment: LANDING GEAR RESOURCE 1

1-Deburr Fwd edge of tube

2- Remove ridge on inside of Fwd edge of tube as per Dwg D2650

3-Weld Fwd Cap as per Dwg D2650. Use aluminum rod. Grind D2647 to fit as required.

Pick:

Qty Part Number Description Batch

A/R Aluminum Rod M107877 SE 8-6-11

4-Grind weld flush to cap on top surface only.

5-Cut Aft end as per dwg 2650 from front of tube and Deburr

6-Remove inner indexing ridge on Aft end of skidtube as per Dwg D2650

7-Open holes for Aft end cap as per Dwg D2650 with #30 Drill Bit using DT8025.

8-Drill pilot holes using Dt 8166 (A,B & C).

9-Locate DT8732 from inner Aft saddle hole & 3rd crossbolt hole. Insert D3286-1 doubler using DT8732 & D206-642-241-T1, then locating doubler off of 3/16" holes, cleco DT8732 & doubler leaving DT8732 for added support.

10- Drill D3286-1 doubler rivet holes in tube using # 40 drill, spot drilling doubler at the same time.

11-Working from the center out, drill # 30 holes into D3286-1 doubler. Cleco each hole as it is being drilled. Verify angle of holes to accommodate rivet heads.

12-Remove and Deburr D3286-1 doubler

13-Remove 3/16" cleco's only and open GHW holes to Ø0.500" as per Dwg D2650

14-Remove D3286-1 doublers, identify orientation, deburr, then attach them to the workorder

15-Remove indexing edge using DT8741 as per Dwg D2650

16-C'sink GHW rivet holes as per Dwg D2650

8-6-11

8-6-16

8-6-19

Dart Aerospace Ltd

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Machine Or Operation:

Description :

6.0

QC6

DIMENSIONAL CHECK



Comment: DIMENSIONAL CHECK

08/06/09 (X)

7.0

SKIDTUBES 1

SKIDTUBESS RESOURCE 1



Comment: LANDING GEAR RESOURCE 1

1-Open crossbolt holes as per Dwg D2650

2-Drill pilot holes using DT8028-3, then open to Ø0.297" as per Dwg D2650. Open Aft cap hole #6.

3-Deburr tube and blow out chips from inside the tube

14
8-6-19

8.0

HAND FINISHING1

HAND FINISHING RESOURCE #1



Comment: HAND FINISHING RESOURCE #1

Chemical Conversion Coat as per QSI 005 4.1

08-06-19

9.0

QC3

INSPECT POWDER COAT/CHEMICAL CONVERSION



Comment: INSPECT POWDER COAT/CHEMICAL CONVERSION

14 8-6-19

10.0

SKIDTUBES 1

SKIDTUBESS RESOURCE 1



Comment: LANDING GEAR RESOURCE 1

1-Open holes to finished size as per Dwg D2650, D2650-1 Drilling Detail (without cutting fluid)

2-C'sink crossbolt spacer holes as per Dwg D2650(without cutting fluid)

3-Deburr and blow out all chips from inside the tube

14
8-6-20

11.0

QC6

DIMENSIONAL CHECK



Comment: DIMENSIONAL CHECK

08/06/20 (X)

12.0

CR3212404

Cherry Rivet



Comment: Qty.: 52.0000 Each(s)/Unit Total : 52.0000 Each(s)

Pick:

Qty Part Number

Description Batch

52 CR3212-4-04 Rivet

107762

(56)

14 8-6-20

Dart Aerospace Ltd

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Seq. #:

Machine Or Operation:

Description :

13.0

D26543

Web



Comment: Qty.: 1.0000 Each(s)/Unit Total : 1.0000 Each(s)

Pick:

Qty Part Number Description Batch

1 D26543-1 Web B 39813

①

M

8-6-20

14.0

SKIDTUBES 1

SKIDTUBESS RESOURCE 1



Comment: LANDING GEAR RESOURCE 1

1-Locate, install and rivet doublers as per Dwg D2650. Micro-shave rivets as required

2-Bond D2654-3 web in place as per QSI 015. Ensure holes line up. Allow 12 Hrs. cure time before cutting

Start Date: 8-6-20 Time: 10:30

Finish Date: 8/6/23 Time: 7:45 AM

Pick:

Qty Part Number Description Batch

A/R Sikaflex-291 M 107893

Sikaflex expire date: 8-10-1

M 8-6-20

15.0

QC5

INSPECT WORK TO CURRENT STEP



Comment: INSPECT WORK TO CURRENT STEP

8/6/23

16.0

D2649

Cross Bolt Spacer



Comment: Qty.: 17.0000 Each(s)/Unit Total : 17.0000 Each(s)

Pick:

Qty Part Number Description Batch

17 D2649 Crossbolt spacer B 37859 BB 08/06/23

17.0

D32863

Spacer



Comment: Qty.: 2.0000 Each(s)/Unit Total : 2.0000 Each(s)

Pick:

Qty Part Number Description Batch

2 D3286-3 Spacer B 37783 BB 08/06/26

W/O:		WORK ORDER CHANGES					
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Job Number:



Seq. #:

Machine Or Operation:

Description :

18.0

SKIDTUBES 1

SKIDTUBESS RESOURCE 1



Comment: LANDING GEAR RESOURCE 1

1-Insert D2649 crossbolt spacers. Weld as per QSI 004 and Dwg D2650. Remember to back drill each hole to 0.25" before welding the other side. Use aluminum rod.

Pick:

Qty Part Number Description Batch

A/R Aluminum Rod

m107877 BE 08/06/23

2-Grind welds flush as per Dwg D2650.

SL 8-6-23

3-Using DT8733, insert (2) D3286-3 spacers as per QSI 004 and Dwg D2650. Remember to back drill each hole to Ø0.402" before welding other side. Use SS rod as required.

A/R SS Rod

NONE BE 8-6-26

4-Counterbore 5/16" x 0.750" deep except 7th hole from Aft end as per Dwg D2650. Deburr

SL 8-6-23

19.0

CCR264SS33

Cherry Rivet



Comment: Qty.: 2.0000 Each(s)/Unit Total: 2.0000 Each(s)

Pick:

Qty Part Number Description Batch

2 CCR264SS3-3 Rivets

107737

SL 8-6-26

20.0

M7885343

Rivet



Comment: Qty.: 2.0000 Each(s)/Unit Total: 2.0000 Each(s)

Pick:

Qty Part Number Description Batch

2 M7885/3-4-3 Rivets

102515

SL 8-6-26

21.0

D2680041

Nut Plate



Comment: Qty.: 1.0000 Each(s)/Unit Total: 1.0000 Each(s)

Pick:

Qty Part Number Description Batch

1 D2680-041 Nut Plate

34599

SL 8-6-26

Dart Aerospace Ltd

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Job Number:



Seq. #:

Machine Or Operation:

Description :

22.0

HAND FINISHING1

HAND FINISHING RESOURCE #1



Comment: HAND FINISHING RESOURCE #1

Install D2680-041 Nut Plate as per Dwg D2650

SL 8-6-26

23.0

QC5

INSPECT WORK TO CURRENT STEP



Comment: Counterbore work to Current Step. Inspect for foreign objects as per QSI 024

5 08/06/26 (X)

24.0

QC9

VISUAL WELDING INSPECTION



Comment: VISUAL WELDING INSPECTION

PD 08-06-26

25.0

HAND FINISHING1

HAND FINISHING RESOURCE #1



Comment: HAND FINISHING RESOURCE #1

Pressure wash as per QSI 005

M-1 08/07/02 (X)

26.0

POWDER COATING

POWDER COATING



Comment: POWDER COATING

Powder Coat White Gloss (Ref. 4.3.5.1) as per QSI 005 4.3. Make sure Nut Plate Thread is protected using paint screw, and mask GHW studs.

START TIME:

2:30

OVEN TEMPERATURE:

320

FINISH TIME:

3:00

BR 10/21

08/07/02 (X)

27.0

QC3

INSPECT POWDER COAT/CHEMICAL CONVERSION



Comment: INSPECT POWDER COAT/CHEMICAL CONVERSION

08-07-07

(X)

28.0

D26483

Wearpad



Comment: Qty.: 4.0000 Each(s)/Unit Total: 4.0000 Each(s)

Pick:

Qty Part Number

Description

Batch

4 D2648-3

Wearpad

1334591

SL

08-07-07

(X)

Dart Aerospace Ltd

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Part Number: D206642141

Job Number:



Seq. #:

Machine Or Operation:

Description :

29.0

D265611

Wearshoe



Comment: Qty.: 1.0000 Each(s)/Unit Total : 1.0000 Each(s)

Pick:

Qty Part Number Description Batch
1 D2656-11 Wearshoe 1334426

JK

30.0

D265621

Wearplate



Comment: Qty.: 1.0000 Each(s)/Unit Total : 1.0000 Each(s)

Pick:

Qty Part Number Description Batch
1 D2656-21 Wearshoe B37101

JK

31.0

D265631

Wearshoe



Comment: Qty.: 1.0000 Each(s)/Unit Total : 1.0000 Each(s)

Pick:

Qty Part Number Description Batch
1 D2656-31 Wearshoe 1327474

JK

32.0

D34291

Wearpad



Comment: Qty.: 1.0000 Each(s)/Unit Total : 1.0000 Each(s)

Pick:

Qty Part Number Description Batch
1 D3429-1 Wearpad B39789

JK

33.0

ALS41032130

Insert



Comment: Qty.: 42.0000 Each(s)/Unit Total : 42.0000 Each(s)

Pick:

Qty Part Number Description Batch
42 ALS4-1032-130 Inserts M105819
or (see QSI 017)

JK

08.07.07

(V)

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

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QA: N/C Closed: _____ Date: _____

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Part Number: D206642141

Job Number:



Seq. #:

Machine Or Operation:

Description :

34.0

AN960JD10L

Washer



Comment: Qty.: 42.0000 Each(s)/Unit Total : 42.0000 Each(s)

Pick:

Qty Part Number

Description

Batch

42 AN960JD10L

Washer

M101340

* JH

AN96010L7

35.0

MS27039108

Screw



Comment: Qty.: 42.0000 Each(s)/Unit Total : 42.0000 Each(s)

Pick:

Qty Part Number

Description

Batch

42 MS27039-1-08

Screw

M108077

JH

36.0

D26511

Plug



Comment: Qty.: 16.0000 Each(s)/Unit Total : 16.0000 Each(s)

Pick:

Qty Part Number

Description

Batch

16 D2651-1

Plugs

B38273

JH

37.0

D26513

O-Ring



Comment: Qty.: 16.0000 Each(s)/Unit Total : 16.0000 Each(s)

Pick:

Qty Part Number

Description

Batch

16 D2651-3

O-Rings

B39784

JH

38.0

MS27039406

Screw



Comment: Qty.: 1.0000 Each(s)/Unit Total : 1.0000 Each(s)

Pick:

Qty Part Number

Description

Batch

1 MS27039-4-06 Screw

M107802

JH

39.0

AN960JD416

Washer



Comment: Qty.: 1.0000 Each(s)/Unit Total : 1.0000 Each(s)

Pick:

Qty Part Number

Description

Batch

1 AN960JD416

Washer

M105426

JH

02.07.07

(X)

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

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Description :

40.0

HAND FINISHING1

HAND FINISHING RESOURCE #1



Comment: HAND FINISHING RESOURCE #1]

1- Install inserts & wearpads as per dwg D2922. Use a drop of Sikaflex inside insert holes before installing wearpad/wearplate.

A/R Sikaflex-291

M1107888

Sikaflex expire date:

08/11

2- Install D2651-3 O-Rings on D2651-1 plugs with Petroleum Jelly and install plugs as per Dwg D2650. Clean excess adhesive.

3- Install MS27039-4-06 Screw as per DEO 9153.

08-07-07 - (2)

41.0

QC5

INSPECT WORK TO CURRENT STEP



Comment: INSPECT WORK TO CURRENT STEP

Inspect for foreign objects as per QSI 024

not needed Here. not fully assembled
QC5 is at Step 47.0

42.0

D2646

Aft Cap



Comment: Qty.: 1.0000 Each(s)/Unit Total: 1.0000 Each(s)

Pick:

Qty Part Number

Description Batch

1 D2646

Aft Cap

1337755

08

006/07

43.0

MS27039108

Screw



Comment: Qty.: 2.0000 Each(s)/Unit Total: 2.0000 Each(s)

Pick:

Qty Part Number

Description Batch

2 MS27039-1-08 Screw

M1108077

08

44.0

AN960JD10L

Washer



Comment: Qty.: 2.0000 Each(s)/Unit Total: 2.0000 Each(s)

Pick:

Qty Part Number

Description Batch

2 AN960JD10L Washer

M1104885

08

08-07-07

08

W/O:		WORK ORDER CHANGES					
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45.0

HAND FINISHING1

HAND FINISHING RESOURCE #1



Comment: HAND FINISHING RESOURCE #1

1-Install D2646 Aft Cap and seal with Sikaflex. Clean excess adhesive

A/R Sikaflex-291 M107888

Sikaflex expire date: 08/11

2-Wing Walk as per Dwg D2650-1 and QSI 005 4.4

Batch: M108496

08-07-07 (v)

46.0

QC3

INSPECT POWDER COAT/CHEMICAL CONVERSION



Comment: INSPECT POWDER COAT/CHEMICAL CONVERSION

08/07/07 (x)

47.0

QC5

INSPECT WORK TO CURRENT STEP



Comment: INSPECT WORK TO CURRENT STEP

08/07/07 (x)

48.0

QC21

FINAL INSPECTION/W/O RELEASE



Comment: FINAL INSPECTION/W/O RELEASE

08/07/09

Job Completion



UMF 08-07-08

W/O:		WORK ORDER CHANGES					
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DART

DESIGN <i>UP</i>	DRAWN BY <i>UP</i>	DART AEROSPACE USA, INC. PORT HADLOCK, WA	
CHECKED <i>PH</i>	APPROVED <i>PH</i>	DRAWING NO. D2650	REV. E SHEET 1 OF 5
DATE 06.03.30		TITLE 206/407 SKIDTUBE ASSEMBLIES	SCALE NTS
A	97.03.25	NEW ISSUE	
B	97.06.26	AS MANUFACTURED CHANGES	
C	97.10.29	CHANGE HOLE PATTERN AND FRONT END	
D	04.05.17	REDRAW; INCORP. DE09136/9153/9163 MOD GROUND HNDLNG ON D2650-1/-3	
E	06.03.30	RMV C'BORE, CHG DRILL, ADD CHAMFER	

RELEASED

16 04 17

Qty -1	Qty -3	Qty -5	Qty -7	Part Number	Description
X				D2650-1	SKIDTUBE ASSEMBLY
	X			D2650-3	SKIDTUBE ASSEMBLY
		X		D2650-5	SKIDTUBE ASSEMBLY
			X	D2650-7	SKIDTUBE ASSEMBLY
1	1	1	1	D2600-1-160	EXTRUSION
1				D2654-1	WEB
	1			D2654-3	WEB
		1		D2654-5	WEB
			1	D2654-7	WEB
1	1	1	1	D2646	AFT CAP
1	1	1	1	D2647	CAP
16	17	19	23	D2649	CROSS BOLT SPACER
16	18	14	22	D2651-1	PLUG
16	18	14	22	D2651-3	O-RING
1	1	1	1	D2680-041	NUT PLATE
2	2			D3286-1	DOUBLER
2	2			D3286-3	STUD
42	44	54	60	ALS7-1032-130	INSERT (or AKS4-1032-130, ALS4-1032-130, ALS7-1032-130)
2	2	2	2	AN960JD10L	WASHER
2	2	2	2	CCR264SS3-3	RIVET
2	2	2	2	CR3212-4-03	RIVET
2	2	2	2	MS27039-1-08	SCREW
1	1	1	1	MS27039-4-06	SCREW
1	1	1	1	AN960JD416	WASHER
52	52			CR3212-4-04	RIVET

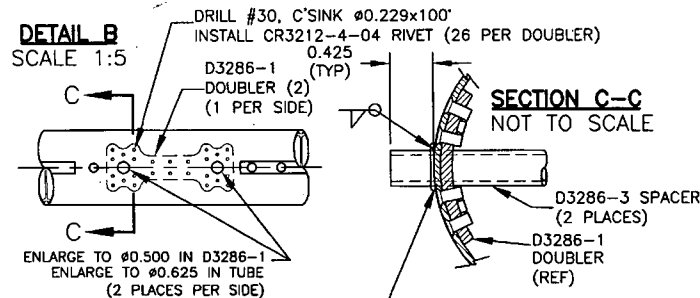
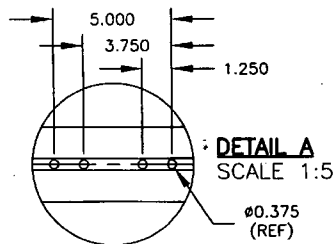
NOTES

- 1) WELD PER DART QSI 004
- 2) DAMAGE TOLERANCE ON FWD BEND:
THERE SHOULD BE NO VISIBLE WRINKLES IN THE BEND FROM THE GROUND TO A HEIGHT OF 5 INCHES ABOVE THE GROUND. IT IS ACCEPTABLE TO POLISH OUT GOUGES UP TO 0.020 DEEP IN THE BENT PORTION OF THE TUBE. A MAXIMUM REDUCTION IN DIAMETER OF 0.150" IS ACCEPTABLE IN THE BENT PORTION OF THE TUBE.
- 3) BOND WEB INTO OUTER TUBE WITH SIKAFLEX-241/-291 ADHESIVE PER DART QSI 015
- 4) INSERT D2651-1 PLUG C/W D2651-3 O-RING IN HOLES MARKED 'P' (BOTH SIDES OF TUBE)
- 5) FINISH: -CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
-POWDER COAT WHITE (4.3.5.1) PER DART QSI 005 4.3
-BLACK ANTI-SKID PAINT AS INDICATED TO 0.5 ABOVE LOCATION RIDGE PER DART QSI 005 4.4
- 6) DRILL Ø0.297 FOR ALS7-1032-130 INSERTS USING TEMPLATE DT8056-1 ON -1 TUBE, DT8056-3 ON -3 TUBE, DT8056-5 ON -5 TUBE, AND DT8056-7 ON -7 TUBE. INSTALL INSERTS AFTER FINISH.
- 7) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED

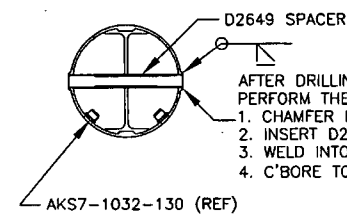
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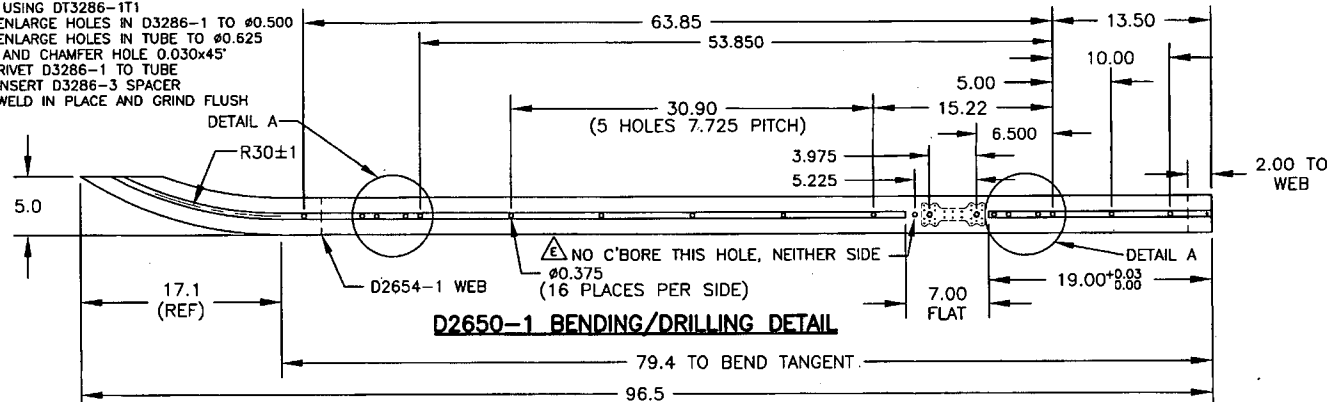
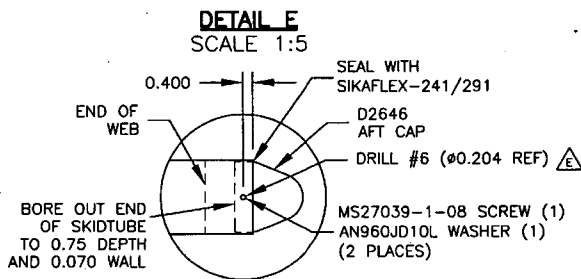


- TO INSTALL D3286-1/-3:
1. GRIND OFF FLANGE IN AREA SHOWN, FLUSH WITH ROUND TUBE
 2. LOCATE & DRILL D3286-1 DOUBLER USING DT3286-1T1
 3. ENLARGE HOLES IN D3286-1 TO Ø0.500
 4. ENLARGE HOLES IN TUBE TO Ø0.625 AND CHAMFER HOLE 0.030x45°
 5. RIVET D3286-1 TO TUBE
 6. INSERT D3286-3 SPACER
 7. WELD IN PLACE AND GRIND FLUSH



- AFTER DRILLING AND BENDING ASSEMBLY PERFORM THE FOLLOWING FOR Ø0.375 HOLES ONLY:
1. CHAMFER HOLE 0.030 X 45°
 2. INSERT D2649 SPACER
 3. WELD INTO PLACE AND GRIND FLUSH
 4. C'BORE TO Ø0.313 X 0.75 DEEP

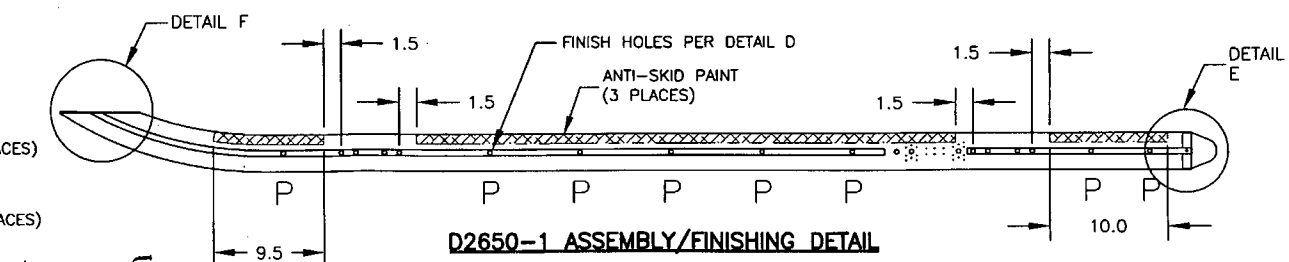
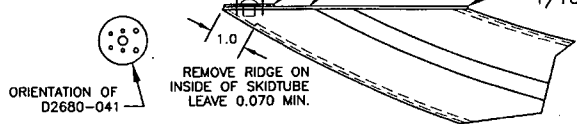
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DETAIL F (NOT TO SCALE)

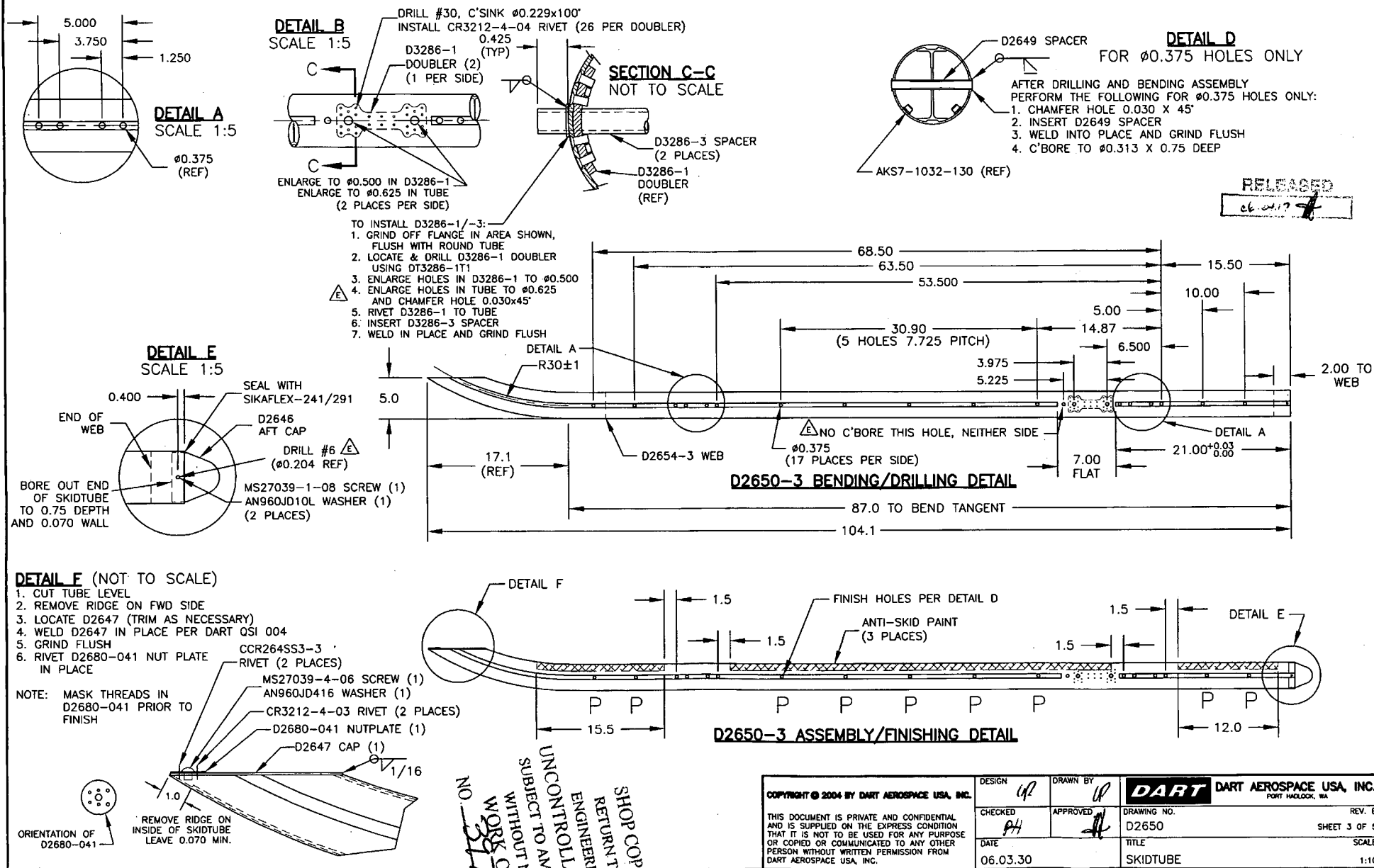
1. CUT TUBE LEVEL
2. REMOVE RIDGE ON FWD SIDE
3. LOCATE D2647 (TRIM AS NECESSARY)
4. WELD D2647 IN PLACE PER DART QSI 004
5. GRIND FLUSH
6. RIVET D2680-041 NUT PLATE IN PLACE

NOTE: MASK THREADS IN D2680-041 PRIOR TO FINISH





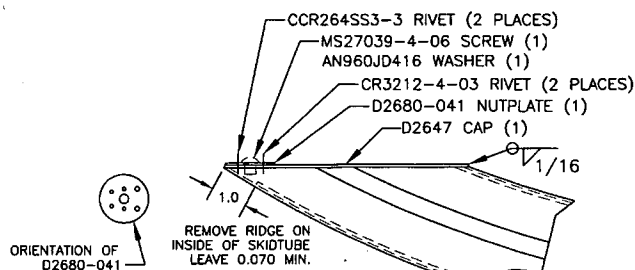
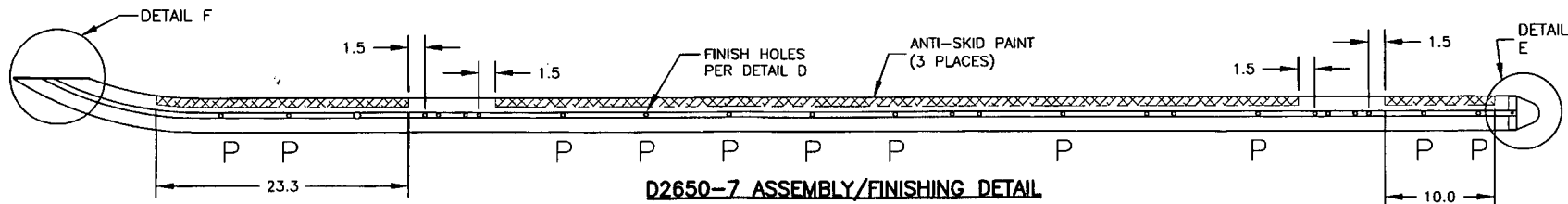
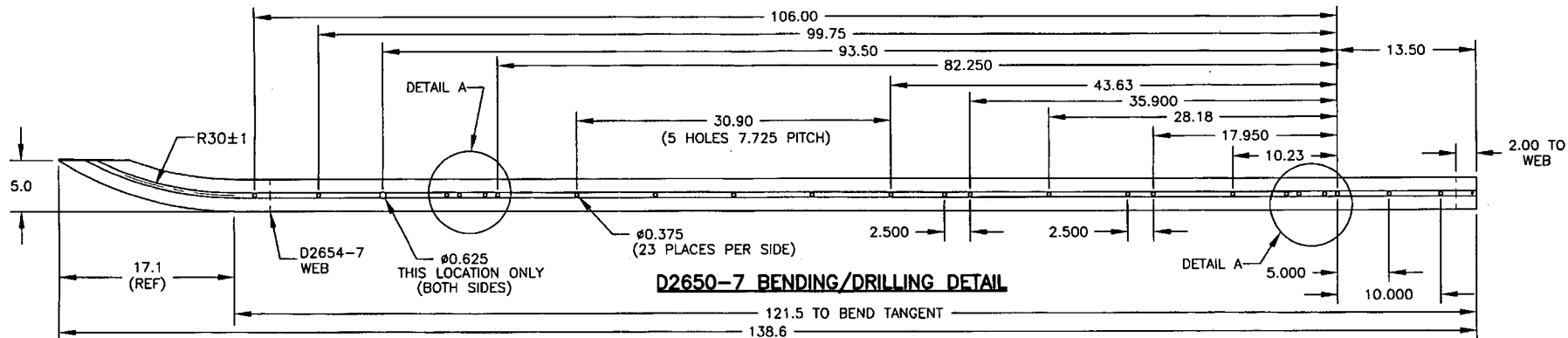
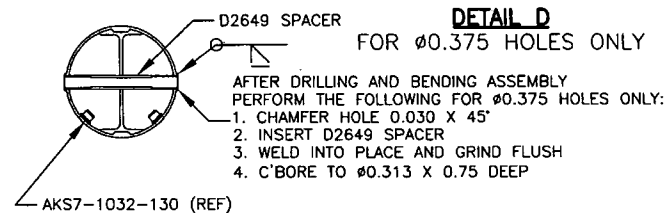
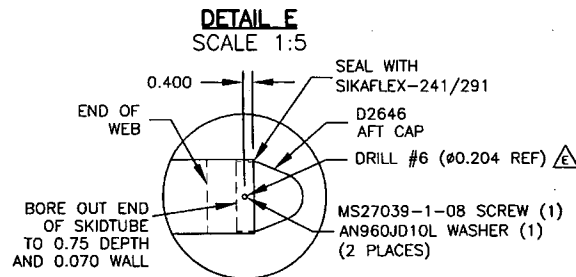
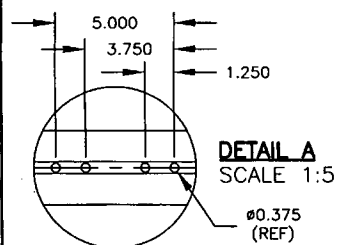
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DETAIL F (NOT TO SCALE)

1. CUT TUBE LEVEL
2. REMOVE RIDGE ON FWD SIDE
3. LOCATE D2647 (TRIM AS NECESSARY)
4. WELD D2647 IN PLACE PER DART QSI 004
5. GRIND FLUSH
6. RIVET D2680-041 NUT PLATE IN PLACE

NOTE: MASK THREADS IN D2680-041 PRIOR TO FINISH

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AWS D17.1.2001
QUALIFICATION TEST RECORD

Name: Barclay Elliot
Job number: 39341A
Part number: D206 612 441
Description: acc skid
Welding Process: Tig ☒ Mig ☐
Base material: Aluminium
Current: AC ☒ DC ☐

TEST REQUIREMENTS AND RESULTS

Visual: pass ☒ fail ☐
Penetration: pass ☒ fail ☐

UNACCEPTABLE

Cracks: pass ☒ fail ☐
Undercut: pass ☒ fail ☐
Pin holes: pass ☒ fail ☐
Overlap (cold lap): pass ☒ fail ☐
Porosity (surface): pass ☒ fail ☐
Coloration: pass ☒ fail ☐

Qualifier P. D. D. D. Date of Test Coupon 08-06-23
Welder Barclay Elliot Date of Test Coupon 08-06-23

The above named individual is qualified in accordance with AWS D17.1.2001 to weld